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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Patrick Bernard

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/774,614	BERNARD ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Raymond Alejandro	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/25/08 has been entered.

This paper is offered in reply to the amendment filed in connection with the aforementioned RCE. The applicant has not yet overcome the prior art rejections. Refer to the abovementioned amendment for specific details on applicant's rebuttal arguments and remarks. Therefore, the present claims are again rejected over the two previously stated art rejections as composed infra and for the reasons of record:

### ***Claim Disposition***

1. Claim 6 has been cancelled.

### ***Applicant's Additional Prior Art Statement***

2. Applicant's Additional Prior Art statement included on pages 14-15 of the 07/25/08 amendment fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that

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provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. It is mentioned in the above-identified amendment, but the information referred to therein has not been considered.

3. Applicant's Additional Prior Art statement included on pages 14-15 of the 07/25/08 amendment fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication (i.e. the cited US application) or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It is mentioned in the above-identified amendment, but the information referred to therein has not been considered.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5, 7, 9-13 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al 5824435 in view of Bernard et al 2003/0152834.

The present invention is directed to a secondary electrochemical cell wherein the disclosed inventive concept comprises the specific binder.

As to claims 1 and 19:

Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate.* Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). *Thus, it is conductive.* Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/

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COL 1, line 30-31). Kawano et al disclose that the non-sintered type nickel electrode is a **positive** electrode (COL 1, lines 5-6).

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55). *The specific combination of binder materials of Kawano et al and Bernard et al provides guidance to satisfy the requirement of having a binder consisting of said mixture.*

As to claims 2-3 and 5:

Kawano et al disclose specific amounts of the components forming the paste layer, for instance, disclosed is the use of 5 g of styrene-butadiene rubber (SBR) in a total amount of 170 g of all components forming the paste layer including nickel hydroxide (100 g), Co powder (10 g), the cellulose (55 g) and styrene-butadiene rubber (5 g) (COL 4, lines 44-55). *Thus, the weight % of Kawano et al's disclosed copolymer is approximately 2.94 % wt.*

With respect to the weight percent of the cellulose, as per the above constituents of Kawano et al's layer, the weight % of the cellulose compound is approximately 32.4 % wt.

As to claim 4:

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) (COL 4, lines 45-55).

As to claims 9-10:

Kawano et al disclose the use of Co powder (COL 4, line 47-50). *In this case, the Co powder is cobalt metal itself.*

As to claim 16:

Kawano et al disclose the use of a fabric of a polyamide resin combined together with the positive electrode (COL 4, lines 62-67). *Thus, it can be said that the layer contains polymer fibers as certain degree of interaction does occur at the interface between the active material layer of the electrode and the disclosed resin.*

As to claim 17:

Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22).

As to claims 20-21:

Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate.* Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44). Kawano et al discuss the use of an expanded metal plate and/or a punched metal plate; and that these electrode substrates do not have a three dimensional construction as in the porous, foamed nickel member (COL 1, lines 39-44).

Kawano et al disclose an alkaline cell as described hereinabove. However, the preceding reference fails to expressly disclose the specific copolymer containing the styrene-acrylate copolymer, the specific weight percent of cellulose compound, the metal-hydride anode, and the specific additional hydroxide compounds and Y-based compound.

As to claims 1 and 19:

Bernard et al disclose secondary electrochemical cells (P0001) comprising alkaline electrolytes (P0021) wherein the electrode comprises a conductive support and a layer containing the active material and a binder (P0002, 0013) wherein the binder is preferably selected from the

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group consisting of styrene butadiene copolymer or styrene-acrylate copolymer (P0013/CLAIM 10). The electrochemically active material is constituted mainly by a nickel hydroxide (P0009). The positive electrode is also disclosed (P0014). The conductive support of Benard et al is a two-dimensional support such as a solid or perforated sheet, an expanded metal, a grid or a fabric (P0013). *The specific combination of binder materials of Kawano et al and Bernard et al provides guidance to satisfy the requirement of having a binder consisting of said mixture.*

As to claim 7:

Bernard et al that the positive electrode further contains hydroxide based on nickel, partially substituted by Co and/or Zn (P00014). *Thus, Benard et al readily envision the introduction of other hydroxide materials including Co-hydroxide and/or Zn-hydroxide.*

As to claims 11-13:

Bernard et al disclose the optional addition of a yttrium compound such as  $Y_2O_3$  (P0014).

As to claim 18:

Bernard et al discloses alkaline electrolyte cells containing metal hydride as the negative electrode (P0002).

As to claims 20-21:

The conductive support of Benard et al is a two-dimensional support such as a solid or perforated sheet, an expanded metal, a grid or a fabric (P0013).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to employ the acrylate polymer of Bernard et al in the binder of Kawano et al to make a copolymer base material containing styrene and acrylate as Bernard et al discloses that the use of acrylate-based binder materials



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improves gravimetric capacity of batteries. Thus, Bernard et al provides a direct teaching that acrylate-based binder materials has beneficial effects on batteries; additionally, this is consistent with Kawano et al's teaching that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary in non-sintered electrodes.

With respect to the specific additional hydroxide compounds and Y-based compound, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to use the specific additional hydroxide compounds and Y-based compound of Benard et al in the positive electrode of Kawano et al as Bernard et al disclose the foregoing hydroxide compounds and Y-based compound are additive for facilitating shaping of the electrode such as texture stabilizer or a thickener (P0013 & 0068).

With respect to the metal-hydride anode, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to use the metal hydride anode of Bernard et al as the negative electrode of Kawano et al as Bernard et al disclose the suitability of using metal hydride anodes in Ni-based alkaline batteries due to their chemical compatibility and electrochemical reactivity for converting chemical energy into electrical energy. As such, Bernard et al discloses that it is well-known in the art to couple Ni-based positive electrodes with metal hydride negative electrode to form an electrochemical cell device capable of generating electrical energy.

As to the specific weight percent of cellulose compound, it would have been obvious to a skilled artisan at the time invention was made to employ the specific weight percent of the cellulose compound as instantly claimed or any other suitable amount thereof as Kawano et al

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themselves disclose that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary in non-sintered electrodes; thus, Kawano et al recognize the specific weight percent of the cellulose compound binder as a variable that achieves a recognized result (*i.e. amount of cellulose compound binder sufficient to maintain the force of bonding between the electrode substrate and the active material layer*) *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382; and *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Generally speaking, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, it is prima-facie obvious to choose or select the specific amount of cellulose compound). *See MPEP 2144.05 Obviousness of Ranges*.

8. Claims 1-5, 9-10, 16-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al 5824435 in view of Vandayburg et al 6399246.

The present invention is directed to a secondary electrochemical cell wherein the disclosed inventive concept comprises the specific binder.

As to claims 1 and 19:

Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an

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active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate*. Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). *Thus, it is conductive*. Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31). Kawano et al disclose that the non-sintered type nickel electrode is a **positive** electrode (COL 1, lines 5-6). *The specific combination of binder materials of Kawano et al and Vandayburg et al provides guidance to satisfy the requirement of having a binder consisting of said mixture.*

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55).

As to claims 2-3 and 5:

Kawano et al disclose specific amounts of the components forming the paste layer, for instance, disclosed is the use of 5 g of styrene-butadiene rubber (SBR) in a total amount of 170 g of all components forming the paste layer including nickel hydroxide (100 g), Co powder (10 g), the cellulose (55 g) and styrene-butadiene rubber (5 g) (COL 4, lines 44-55). *Thus, the weight % of Kawano et al's disclosed copolymer is approximately 2.94 % wt.*

With respect to the weight percent of the cellulose, as per the above constituents of Kawano et al's layer, the weight % of the cellulose compound is approximately 32.4 % wt.

As to claim 4:

As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) (COL 4, lines 45-55).

As to claims 9-10:

Kawano et al disclose the use of Co powder (COL 4, line 47-50). *In this case, the Co powder is cobalt metal itself.*

As to claim 16:

Kawano et al disclose the use of a fabric of a polyamide resin combined together with the positive electrode (COL 4, lines 62-67). *Thus, it can be said that the layer contains polymer fibers as certain degree of interaction does occur at the interface between the active material layer of the electrode and the disclosed resin.*

As to claim 17:

Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22).

As to claims 20-21:

Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). *Thus, it is a two-dimensional substrate.* Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44). Kawano et al discuss the use of an expanded metal plate and/or a punched metal plate; and that these electrode substrates do not have a three dimensional construction as in the porous, foamed nickel member (COL 1, lines 39-44).

Kawano et al disclose an alkaline cell as described hereinabove. However, the preceding reference fails to expressly disclose the specific styrene-acrylate copolymer and the specific weight percent of cellulose compound.

As to claims 1 and 19:

Vandayburg et al discloses secondary electrochemical cells comprising a positive and negative electrode, an electrolyte which can be either an aqueous or non-aqueous electrolyte (Col 2, lines 5-22 & lines 49-57; COL 6, lines 20-21/CLAIM 1). A water soluble binder useful for preparing electrodes for either primary or secondary batteries, having either aqueous or non-aqueous electrolyte, containing a styrene-butadiene copolymer or a styrene-acrylate copolymer (ABSTRACT/COL 1, lines 9-22/COL 7, lines 38-42/CLAIM 1). Vandayburg et al discloses metal substrates such as a thin pliable sheet of metal i.e. metal foil (a two dimensional support) (COL 5, lines 50-58); and the advantage of using the disclosed binders in AQUEOUS electrolytes due to the excellent adhesive properties, flexibility and resilience (COL 6, lines 20-23). *The specific combination of binder materials of Kawano et al and Vandayburg et al provides guidance to satisfy the requirement of having a binder consisting of said mixture.*

As to claims 20-21:

Vandayburg et al discloses metal substrates such as a thin pliable sheet of metal i.e. metal foil (a two dimensional support) (COL 5, lines 50-58);

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time invention was made to employ a styrene-acrylate copolymer of Vandayburg et al in the binder of Kawano et al as Vandayburg et al discloses that such a binder eliminates or reduces the need for organic solvents during preparation of an

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electrode made of a particulate active electrode material; and the binder exhibits good chemical resistance, adhesive properties, flexibility and resilience, making it well-suited for use in preparing batteries (Abstract).

As to the specific weight percent of cellulose compound, it would have been obvious to a skilled artisan at the time invention was made to employ the specific weight percent of the cellulose compound as instantly claimed or any other suitable amount thereof as Kawano et al themselves disclose that polymeric-based materials are used as binders in order to increase the force of bonding between the electrode substrate and the active material layer which is necessary in non-sintered electrodes; thus, Kawano et al recognize the specific weight percent of the cellulose compound binder as a variable that achieves a recognized result (*i.e. amount of cellulose compound binder sufficient to maintain the force of bonding between the electrode substrate and the active material layer*) *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382; and *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Generally speaking, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, it is prima-facie obvious to choose or select the specific amount of cellulose compound). *See MPEP 2144.05 Obviousness of Ranges*.

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9. Claims 7 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Kawano et al 5824435 in view of Bernard et al 2003/0152834; and/or b) Kawano et al 5824435 in view of Vandayburg et al 6399246 as applied to claims 1 and 6 above, and further in view of Miyamoto et al 2005/0244712.

The preceding prior art references are applied, argued and incorporated herein for the reasons manifested above. However, none of the preceding reference expressly disclose the specific hydroxide compounds and the specific Y-based or Yb-based compounds.

As to claim 7:

Miyamoto et al disclose a sealed nickel-based alkaline electrochemical cell (TITLE/ABSTRACT/P0039-0040) wherein Co-hydroxide or hydroxide based on nickel doped with Zn (*the hydroxide of an element such as Zn*) are added to the positive electrode material including nickel hydroxide (P0025-0026). Disclosed is that positive electrode active substances comprising these additives have quite excellent conductivity (P0025).

As to claims 11-15:

Miyamoto et al disclose a sealed nickel-based alkaline electrochemical cell (TITLE/ABSTRACT/P0039-0040) wherein the capacitance preserving ratio at the time of storage can be improved by adding compounds of Y and Yb to the positive electrode active substance comprising nickel hydroxide (P0027). Examples of those compounds are  $Y_2O_3$  and  $Yb_2O_3$  (P0027).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the specific hydroxide compounds of Miyamoto et al in the electrode material of the combined prior art

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references as set forth above as Miyamoto et al teach that positive electrode active substances comprising these additives have quite excellent conductivity (P0025).

With respect to the specific Y-based or Yb-based compounds, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the specific Y-based or Yb-based compounds of Miyamoto et al in the electrode material of the combined prior art references as set forth above as Miyamoto et al teach that the capacitance preserving ratio at the time of storage can be improved by adding the specific compounds of Y and Yb to the positive electrode active substance comprising nickel hydroxide (P0027).

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over a) Kawano et al 5824435 in view of Bernard et al 2003/0152834; and/or b) Kawano et al 5824435 in view of Vandayburg et al 6399246 as applied to claims 1 and 6 above, and further in view of Takemura et al RE37935.

The preceding prior art references are applied, argued and incorporated herein for the reasons manifested above. However, none of the preceding reference expressly disclose the specific grain size of the nickel hydroxide.

Takemura et al disclose an alkaline storage cell like a nickel-cadmium storage cell (COL 1, lines 13-25) wherein nickel hydroxide having an average grain size of 1.5-200  $\mu\text{m}$  is used (COL 4, lines 21-30). Specifically, **EMBODIMENT 1** uses a nickel hydroxide whose grain shape is globe (*spheroidal shape*) with an average grain size of 10  $\mu\text{m}$  (COL 5, lines 40-50). Thus, **EMBODIMENT 1** shows the grain size of the nickel hydroxide with sufficient specificity.



In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the field of invention at the time invention was made to employ the nickel hydroxide having specific grain size of Takemura et al in the electrode material of the combined prior art references as set forth above as Takemura et al teach that such a specific grain size is a suitable grain size for nickel hydroxide active materials because smaller grain sizes can be especially conspicuous as it interferes with the dissolution of the active material in the electrolyte and bigger grain sizes are not desirable because nickel hydroxide formed of so large grains is hard to add uniformly to the active material. Thus, the specific grain size of 10  $\mu\text{m}$  as embodied in **EMBODIMENT 1** is well within Takemura et al's disclosed grain size range and represents a desirable grain size exhibiting the beneficial effects disclosed by Takemura.

### ***Response to Arguments***

1. Applicant's arguments filed 07/25/08 have been fully considered but they are not persuasive.
2. With respect to applicant's arguments concerning the lack of "*a positive non-sintered electrode containing a nickel hydroxide*", it is instructive to recognize that Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31); and that nickel hydroxide is a non-sintered type **positive** nickel electrode (COL 1, lines 5-6). Since the primary reference Kawano et al fully and clearly discloses the specific active material, it is completely irrelevant what other active materials the secondary references prefer to use. Thus, applicant's arguments concerning the nature of the active material of the secondary references is totally out-of-place and immaterial. However, Bernard et al also disclose that a

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nickel hydroxide material can be used as part of the electrode material at issue (P0009 of Bernard et al).

3. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). *In general, most of applicant's arguments against the 103 rejections based upon the combination of Kawano et al'435 in view of Bernard et al'834 and/or Kawano et al'435 in view of Vandayburg et al'246 appear to be grounded on independent analysis and discussions of each reference alone or singly instead of the suggested teachings provided by their respective combinations. As such, all of the arguments advanced by the applicant that are based on piecemeal analysis of a reference have been considered but found unconvincing. This is to address all of the arguments advanced by the applicant on pages 6-10 of the 07/25/08 amendment.*

To summary what the prior art of record teaches or fairly suggests, the Examiner is reproducing herein for applicant's convenience what teachings are covered by the art of record:

a) *Kawano et al disclose an alkaline storage cell comprising a non-sintered positive electrode (COL 1, lines 5-10/ COL 4, line 62 to COL 5, line 5/COL 1, lines 30-35) wherein an active material paste is formed by the use of a polymeric binder and an electrically conductive powder, then, the paste is coated on the electrode substrate (COL 1, lines 58-65/COL 2, lines 44-53/COL 4, lines 44-55/ CLAIM 1). Disclosed is that the substrate do not have a three-dimensional construction as in other electrodes (COL 1, lines 44-48). Thus, it is a two-dimensional substrate. Substrate is made of a punched metal plate or expanded metal plate (COL 1, lines 41-44), or a strip-like nickel plate (COL 3, lines 18-22). Thus, it is conductive. Kawano et al disclose the use of nickel hydroxide as electrochemical active material (COL 4, line 47/ COL 1, line 30-31). As the polymeric binder, Kawano et al disclose that it is known to use carboxymethyl cellulose (CMC) and styrene-butadiene rubber (SBR) (COL 4, lines 45-55).*

b) *Bernard et al disclose secondary electrochemical cells (P0001) comprising alkaline electrolytes (P0021) wherein the electrode comprises a conductive support and a layer*

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*containing the active material and a binder (P0002, 0013) wherein the binder is preferably selected from the group consisting of styrene butadiene copolymer or styrene-acrylate copolymer (P0013/CLAIM 10). The electrochemically active material is constituted mainly by a nickel hydroxide (P0009). The positive electrode is also disclosed (P0014). The conductive support of Benard et al is a two-dimensional support such as a solid or perforated sheet, an expanded metal, a grid or a fabric (P0013).*

*c) Vandayburg et al discloses secondary electrochemical cells comprising a positive and negative electrode, an electrolyte which can be either an aqueous or non-aqueous electrolyte (Col 2, lines 5-22 & lines 49-57; COL 6, lines 20-21/CLAIM 1). A water soluble binder useful for preparing electrodes for either primary or secondary batteries, having either aqueous or non-aqueous electrolyte, containing a styrene-butadiene copolymer or a styrene-acrylate copolymer (ABSTRACT/COL 1, lines 9-22/COL 7, lines 38-42/CLAIM 1). Vandayburg et al discloses metal substrates such as a thin pliable sheet of metal i.e. metal foil (a two dimensional support) (COL 5, lines 50-58); and the advantage of using the disclosed binders in AQUEOUS electrolytes due to the excellent adhesive properties, flexibility and resilience (COL 6, lines 20-23).*

The Examiner's rejection as postulated by the Examiner hereinabove combines a) Kawano et al with b) Bernard et al, and a) Kawano et al with c) Vandayburg et al. The examiner verily believes that the combined prior art clearly teaches or suggests all of the features claimed by the applicant. Applicant is kindly requested to review the foregoing disclosures for better understanding of art rejections, and to analyze what is within the purview of the skilled artisan.

4. With respect to applicant's contention that Kawano et al disclose a three dimensional electrode instead of a two dimensional conductive support, the examiner respectfully disagrees with. For instance, Kawano et al discuss the use of an expanded metal plate and/or a punched metal plate; and that these electrode substrates do not have a three dimensional construction as in the porous, foamed nickel member (COL 1, lines 39-44). This disclosure suffices to contend that Kawano et al does directly or indirectly envision the use of two-dimensional substrates or support independently of the disclosed corrugated structure of the support. However, if applicant is still unconvinced, it is worth to note that both Benard et al (P0013) and Vandayburg et al

(COL 5, lines 50-58) do disclose, teach, employ or exemplify using two dimensional conductive support for holding the electrochemically active material and binders. Therefore, directly or indirectly, vaguely suggested or exemplified, the prior art of record does envision utilizing two-dimensional supports for holding the electrochemically active material and binders.

5. In response to applicant's argument that "*Kawano et al solves the problem of improving the bonding force between the substrate and the active materials*" and that "*Kawano seeks to improve the adherence of the active material layer to the substrate (by apparently using a three-dimensional support)*", the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

6. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e., the thickness of Kawano et al's electrode; the apparent bonding between the substrate and the active material of the applicant;* ) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The examiner does not understand why applicant argues against the thickness of Kawano et al's electrode because the claimed invention does not even claim or suggest a thickness. Therefore, the thickness of the electrode is not at issue at the present time. If applicant desires to have it considered by the Examiner, such a limitation must be incorporated into the claimed invention.

Applicant has also found room in his contention to bring into discussion that Benard et al teach a negative electrode, not a positive electrode. Well, an examination of primary reference Kawano et al reveals that the polarity of the nickel hydroxide electrode is positive (COL 1, lines 5-6). Thus, the cited prior art as combined does teach the specific positive-non sintered electrode made of a nickel hydroxide.

7. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. (***Emphasis added***→) Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). This is equally applicable to both applicant's arguments concerning the lack of motivation to combine the primary reference with the secondary references ("*the skilled person would not consider Bernard which focuses on the negative electrode...*"; "*the person skilled in the art knows that such a binder is not suitable for cells having an alkaline electrolyte (in reference to Vandayburg et al's electrochemical system)*") and the interchangeability of the two and three dimensional supports in Kawano et al as formulated by the Examiner.

If a person of ordinary skill can implement a predictable variation or obtain a predictable result or characteristic, 35 USC 103 likely bars its patentability. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

If a technique has been used to improve one device or product (*i.e. using a binder made of styrene-acrylate copolymer*), and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way (*i.e. electrodes for use in aqueous or non-aqueous electrochemical cells*) using the known technique is obvious unless its actual application is beyond his or her skill. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

The present claims are obvious because the result/combination of this teaching (*the binder made of styrene-acrylate copolymer*) would predictably lead to a satisfactory product, article or step (*i.e. an electrode for use in aqueous or non-aqueous electrochemical cells*). *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (U.S. 2007) & *KSR International Co. v. Teflex Inc.*, 550 US, 82 USPQ2d 1385 (2007).

8. Applicant's Additional Prior Art statement included on pages 14-15 of the 07/25/08 amendment fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and

(5) a heading that clearly indicates that the list is an information disclosure statement. It is mentioned in the above-identified amendment, but the information referred to therein has not been considered.

Applicant's Additional Prior Art statement included on pages 14-15 of the 07/25/08 amendment fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication (i.e. the cited US application) or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It is mentioned in the above-identified amendment, but the information referred to therein has not been considered.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795